

REFERENCES

- Aziz, A. A., Kheang, L.S., Soon, L.W., & May, C.Y. (2011). *Business Opportunities in Palm Biomass for SMEs*. Slide. Kuala Lumpur: Malaysia Palm Oil Board (MPOB).
- Abdel Moamen, O. A., Ismail, I. M., Abdelmonem, N., & Abdel Rahman, R. O. (2015). Factorial design analysis for optimizing the removal of cesium and strontium ions on synthetic nano-sized zeolite. *Journal of the Taiwan Institute of Chemical Engineers*, 55, 133–144.
- Khalil, H. P. S. A., Fizree, H. M., Jawaid, M., & Alattas, O. S. (2011). Preparation and characterization of nano-structured materials from oil palm ash: a bio-agricultural waste from oil palm mill. *BioResources*, 6 (4), 4537–4546.
- Adamczyk, Z., & Białecka, B. (2005). Hydrothermal synthesis of zeolites from Polish coal fly ash. *Polish Journal of Environmental Studies*, 14 (6), 713–719.
- Ahmad, A. A., Hameed, B. H., & Aziz, N. (2007). Adsorption of direct dye on palm ash: Kinetic and equilibrium modeling. *Journal of Hazardous Materials*, 141, 70–76.
- Aldahri, T., Behin, J., Kazemian, H., & Rohani, S. (2016). Synthesis of zeolite Na-P from coal fly ash by thermo-sonochemical treatment. *Fuel*, 182, 494–501.
- Alves, J. A. B. L. R., Dantas, E. R. S., Pergher, S. B. C., Melo, D. M. A., & Melo, M. A. F. (2014). Synthesis of high value-added zeolitic materials using glass powder residue as a silica source. *Materials Research*, 17 (1), 213–218.
- Andaç, Ö., Tatlıer, M., Sirkecioğlu, A., Ece, I., & Erdem-Şenatalar, A. (2005). Effects of ultrasound on zeolite A synthesis. *Microporous and Mesoporous Materials*, 79, 225–233.
- Antony, J. (2014). *Design of experiments for engineers and scientists*. 2nd Edition. USA: Elsevier Insight.
- Askari, S., Miar Alipour, S., Halladj, R., & Davood Abadi Farahani, M. H. (2013). Effects of ultrasound on the synthesis of zeolites: a review. *Journal of Porous Materials*, 20 (1), 285–302.
- ASTM. (2013). D5357-03 Standard test method for determination of relative crystallinity of zeolite sodium A by x-ray diffraction, 3 (Reapproved 2013), 1–3.
- Auerbach, S. M., Carrado, K. A., & Dutta, P. K. (2003). *Handbook of zeolite science and technology*. USA: Marcel Dekker, Inc.
- Azizi, S. N., & Asemi, N. (2014). The effect of ultrasonic and microwave-assisted aging on the synthesis of zeolite P from Iranian perlite using box-behnken experimental design. *Chemical Engineering Communications*, 201(7), 909–925.

- Azzolina Jury, F., Polaert, I., Estel, L., & Pierella, L. B. (2014). Enhancement of synthesis of ZSM-11 zeolite by microwave irradiation. *Microporous and Mesoporous Materials*, 198, 22–28.
- Balbaşı, M. (2013). Application of full factorial design method to silicalite synthesis. *Materials Research Bulletin*, 48, 2908–2914.
- Basiron, Y. & Simeh, M. A. (2005). Vision 2020 – the palm oil phenomenon. *Oil Palm Industry Economic Journal*, 5 (2), 1–10.
- Bedard, R. L. (2010). *Zeolites in industrial separation and catalysis*. Kulprathipanja, S. Great Britain: Wiley-VCH Verlag GmbH & Co. KgaA.
- Belviso, C., Cavalcante, F., & Fiore, S. (2010). Synthesis of zeolite from Italian coal fly ash: Differences in crystallization temperature using seawater instead of distilled water. *Waste Management*, 30, 839–847.
- Belviso, C., Cavalcante, F., Lettino, A., & Fiore, S. (2011). Effects of ultrasonic treatment on zeolite synthesized from coal fly ash. *Ultrasonics Sonochemistry*, 18, 661–668.
- Belviso, C., Cavalcante, F., & Fiore, S. (2013). Ultrasonic waves induce rapid zeolite synthesis in a seawater solution. *Ultrasonics Sonochemistry*, 20, 32–36.
- Blasioli, S., Martucci, A., Paul, G., Gigli, L., Cossi, M., Johnston, C. T., Marchese, L., & Braschi, I. (2014). Removal of sulfamethoxazole sulfonamide antibiotic from water by high silica zeolites: A study of the involved host-guest interactions by a combined structural, spectroscopic, and computational approach. *Journal of Colloid and Interface Science*, 419, 148–159.
- Bohra, S., Kundu, D., & Kanti, M. (2013). Synthesis of cashew nut-like zeolite nap powders using agro-waste material as silica source. *Materials Letters*, 106, 182–185.
- Bohra, S., Kundu, D., & Naskar, M. K. (2014). One-pot synthesis of NaA and NaP zeolite powders using agro-waste material and other low cost organic-free precursors. *Ceramics International*, 40, 1229–1234.
- Bradley, S.A., Broach, R. W., Mezza, T. M., Prabhakar, S. & Sinkler, W. (2010). *Zeolites in industrial separation and catalysis*. Kulprathipanja, S. Weinheim: Wiley-VCH Verlag GmbH & Co. KgaA.
- Broach 2010- Broach, R.W. (2010). *Zeolites in industrial separation and catalysis*. Kulprathipanja, S. Great Britain: Wiley-VCH Verlag GmbH & Co. KgaA.
- Bukhari, S. S., Behin, J., Kazemian, H., & Rohani, S. (2015). Conversion of coal fly ash to zeolite utilizing microwave and ultrasound energies: A review. *Fuel*, 140, 250–266.
- Chang, H.-L., & Shih, W.-H. (2000). Synthesis of zeolites A and X from fly ashes and their ion-exchange behavior with Cobalt ions. *Industrial & Engineering Chemistry Research*, 39, 4185–4191.

- Choi, J., Kim, T. H., Kim, H. Y., & Kim, W. (2016). Ultrasonic washing of textiles. *Ultrasonics Sonochemistry*, 29, 563–567.
- Cui, X., Chen, S., Zhang, X., Ma, J., & Li, R. (2011). Ammonia removal from aqueous solution by zeolites synthesized from coal fly ash. *2011 Fourth International Conference on Intelligent Computation Technology and Automation*, 2, 806–808.
- Daintin, J. (2004). *Dictionary of Chemistry*. England: Oxford University Press.
- Farias, R. F. de F. (2009). *Chemistry on modified oxide and phosphate surfaces: fundamentals and applications*. Amsterdam: Elsevier.
- Dey, K. P., Ghosh, S., & Naskar, M. K. (2012). A facile synthesis of ZSM-11 zeolite particles using rice husk ash as silica source. *Materials Letters*, 87, 87–89.
- Du Plessis, P. W., Ojumu, T. V., Fatoba, O. O., Akinyeye, R. O., & Petrik, L. F. (2014). Distributional fate of elements during the synthesis of zeolites from South African coal fly ash. *Materials*, 7(4), 3305–3318.
- Fang, X., Wu, S., Lü, S., Wang, J., & Yang, X. (2017). Microstructure evolution and mechanical properties of quasicrystal-reinforced Mg-Zn-Y alloy subjected to ultrasonic vibration. *Materials Science and Engineering: A*, 679, 372–378.
- Flanigen, E.M., Broach, R.W. & Wilson, S.T. 2010. *Zeolites in industrial separation and catalysis*. Kulprathipanja, S. Great Britain: Wiley-VCH Verlag GmbH & Co. KGaA.
- Foo, K. Y., & Hameed, B. H. (2009). Value-added utilization of oil palm ash: A superior recycling of the industrial agricultural waste. *Journal of Hazardous Materials*, 172, 523–531.
- Fukui, K., Kanayama, K., Yamamoto, T., & Yoshida, H. (2007). Effects of microwave irradiation on the crystalline phase of zeolite synthesized from fly ash by hydrothermal treatment. *Advanced Powder Technology*, 18(4), 381–393.
- Gaya, U. I., Jibril, B. Y., Al-Wehaibi, Y. M., Al-Hajri, R. S., & Naser, J. T. (2012). Ring opening of decalin over zeolite-supported Ni-Co-Mo catalysts. *2nd International Conference on Environment, Energy and Biotechnology*, 49(28), 139–143.
- Gupta, T. (2009). *Copper interconnect technology*. USA: Elsevier.
- Gougazeh, M., & Buhl, J. C. (2014). Synthesis and characterization of zeolite A by hydrothermal transformation of natural Jordanian kaolin. *Journal of the Association of Arab Universities for Basic and Applied Sciences*, 15(1), 35–42.
- Harja, M., Buema, G., Sutiman, D. M., Munteanu, C., & Bucur, D. (2012). Low cost adsorbents obtained from ash for copper removal. *Korean Journal of Chemical Engineering*, 29(12), 1735–1744.

- Hanipah, S. H., Othman, N. H., Hanapi, S. N. M., & Idrus, N. (2011). Conversion of fly ash into zeolite: Effect of reaction temperature. *ISBEIA 2011 - 2011 IEEE Symposium on Business, Engineering and Industrial Applications*, 188–191.
- Hongxia, Y., Lianjun, W., Jiansheng, L., Xiuyun, S., Weiqing, H., & Jinyou, S. (2011). Synthesis and characterization of zeolitic pellets manufactured from coal fly ash. *Proceedings - 3rd International Conference on Measuring Technology and Mechatronics Automation*, 3, 621–624.
- Hums, E., Musyoka, N. M., Baser, H., Inayat, A., & Schwieger, W. (2014). In-situ ultrasound study of the kinetics of formation of zeolites Na-A and Na-X from coal fly ash. *Research on Chemical Intermediates*, 1–16.
- Husain, Z., Zainac, Z., & Abdullah, Z. (2002). Briquetting of palm fibre and shell from the processing of palm nuts to palm oil. *Biomass and Bioenergy*, 22(6), 505–509.
- Hussin, M. W., Bhutta, M. A. R., Azreen, M., Ramadhansyah, P. J., & Mirza, J. (2014). Performance of blended ash geopolymer concrete at elevated temperatures. *Materials and Structures*.
- Hussin, M. W., Muthusamy, K., & Zakaria, F. (2010). Effect of mixing constituent toward engineering properties of POFA cement-based aerated concrete. *Journal of Materials in Civil Engineering*, 22(4), 287–295.
- Ibrahim, S. A. (2007). *Synthesis and characterization of zeolites from sodium aluminosilicate solution*. Master Thesis. Universiti Sains Malaysia, Malaysia.
- Islam, M. M. U., Mo, K. H., Alengaram, U. J., & Jumaat, M. Z. (2015). Mechanical and fresh properties of sustainable oil palm shell lightweight concrete incorporating palm oil fuel ash. *Journal of Cleaner Production*, 115, 307–314.
- Inglezakis, V. J. & Loizidou, M. D. (2012). Handbook of natural zeolites. Inglezakis, V.J. and Zorpas, A. A. USA: Bentham eBooks.
- Ismail, M. H. S., Dalang, S., Syam, S., & Izhar, S. (2013). A study on zeolite performance in waste treating ponds for treatment of palm oil mill effluent. *Journal of Water Resource and Protection*, 5, 18–27.
- Jiang, J., Duanmu, C., Yang, Y., Gu, X., & Chen, J. (2014). Synthesis and characterization of high siliceous ZSM-5 zeolite from acid-treated palygorskite. *Powder Technology*, 251, 9–14.
- Kamarudin, R. A., Matlob, A. S., Jubri, Z., & Ramli, Z. (2009). Extraction of silica and alumina from coal fly ash for the synthesis of zeolites. *ICEE 2009 - Proceeding 2009 3rd International Conference on Energy and Environment: Advancement towards Global Sustainability*, 456–461.
- Karami, D., & Rohani, S. (2009). Process intensification synthesis of pure zeolite Y using soluble silicate, a two-level factorial experimental design, *Chemical Engineering and Processing*, 48, 1288–1292.

- Kawase, R., Iida, A., Kubota, Y., Komura, K., Sugi, Y., Oyama, K., & Itoh, H. (2007). Hydrothermal synthesis of calcium and boron containing MFI-type zeolites by using organic amine as structure directing agent. *Industrial and Engineering Chemistry Research*, 46 (4), 1091–1098.
- Kaya, Y. E., & Ozkan, F. C. (2012). Effect of ultrasound on the kinetics of cation exchange in NaX zeolite. *Ultrasonics Sonochemistry*, 19(3), 701–706.
- Kazemian, H., Naghdali, Z., Ghaffari Kashani, T., & Farhadi, F. (2010). Conversion of high silicon fly ash to Na-P1 zeolite: Alkaline fusion followed by hydrothermal crystallization. *Advanced Powder Technology*, 21(3), 279–283.
- Khalid, M., Joly, G., Renaud, a, & Magnoux, P. (2004). Removal of phenol from water by adsorption using zeolites. *Industrial and Engineering Chemistry Research*, 43(17), 5275–5280.
- Khosravi, A., Esmhosseini, M., Jalili, J., & Khezri, S. (2012). Optimization of ammonium removal from waste water by natural zeolite using central composite design approach. *Journal of Inclusion Phenomena and Macrocyclic Chemistry*, 74(1–4), 383–390.
- Kim, S., Lee, W., & Son, Y. (2016). Ultrasonic and mechanical soil washing processes for the remediation of heavy-metal-contaminated soil. *Japanese Journal of Applied Physics*, 55(7), 5–9.
- Kinoshita, C. M., Turn, S. Q., Overend, R. P., & Bain, R. L. (1998). Power generation potential of biomass gasification systems, *Journal of Energy Engineering*, 123(3), 88–99.
- Kongnoo, A., Tontisirin, S., Worathanakul, P., & Phalakornkule, C. (2017). Surface characteristics and CO₂ adsorption capacities of acid-activated zeolite 13X prepared from palm oil mill fly ash. *Fuel*, 193, 385–394.
- Kusworo, T. D., Ismail, A. F., & Mustafa, A. (2015). Experimental Design and Response Surface Modeling of Pi / Pes-Zeolite 4A Mixed Matrix Membrane for CO₂ Separation. *Journal of Engineering Science and Technology*, 10(9), 1116–1130.
- Kraber, S. (2013). *Getting Started with Design-Expt*. Stat-Ease, Inc. Retrieved from www.statease.com/webinar.html
- Lahyani, A., & Trabelsi, M. (2016). Ultrasonic-assisted synthesis of flavones by oxidative cyclization of 2'-hydroxychalcones using iodine monochloride. *Ultrasonics Sonochemistry*, 31, 626–630.
- Lee, K. M., & Jo, Y. M. (2010). Synthesis of zeolite from waste fly ash for adsorption of CO₂. *Journal of Material Cycles and Waste Management*, 12(3), 212–219.
- Lim, N. H. A. S., Ismail, M. A., Lee, H. S., Hussin, M. W., Sam, A. R. M., and Samadi, M. (2015). The effects of high volume nano palm oil fuel ash on microstructure properties and hydration temperature of mortar. *Construction and Building Materials*, 93, 29–34.

- Liu, Y., Huang, W., Zhao, Y., & Dou, T. (2009). Ultrasound promoted direct synthesis of nano Cu-Zn-Al-ZSM-5 in acid medium. *Reaction Kinetics and Catalysis Letters*, 96(1), 157–163.
- Liu, H., Li, F., & Zhang, G. (2010). Experimental study on adsorption removal of sulfate with synthesized zeolite made from fly ash. *2010 4th International Conference on Bioinformatics and Biomedical Engineering*, 0–3.
- Luo, X., He, L., Wang, H., Yan, H., & Qin, Y. (2016). An experimental study on the motion of water droplets in oil under ultrasonic irradiation. *Ultrasonics Sonochemistry*, 28, 110–117.
- Mahlia, T. M. I., Abdulmuin, M. Z., Alamsyah, T. M. I., & Mukhlisshien, D. (2001). An alternative energy source from palm wastes industry for Malaysia and Indonesia. *Energy Conversion and Management*, 42(18), 2109–2118.
- Mainganye, D. (2012). *Synthesis of zeolites from South African coal fly ash: Investigation of scale-up conditions*. Master Thesis. Cape Peninsula University of Technology, Cape Town.
- Majchrzak-Kuceba, I. (2013). A simple thermogravimetric method for the evaluation of the degree of fly ash conversion into zeolite material. *Journal of Porous Materials*, 20(2), 407–415.
- Malherbe, R. M. A. R., (2010). *The physical chemistry of materials: energy and environmental applications*. USA: CRC Press.
- Malek, N., & Yusof, A. (2007). Removal of Cr (III) from aqueous solutions using zeolite NaY prepared from rice husk ash. *The Malaysian Journal of Analytical Sciences*, 11(1), 76–83.
- Mansouri, N., Rikhtegar, N., Panahi, H. A., Atabi, F., & Shahraki, B. K. (2013). Porosity, characterization and structural properties of natural zeolite - clinoptilolite - as a sorbent. *Environment Protection Engineering*, 39(1), 139–152.
- Mihajlović, M., Perišić, N., Pezo, L., Stojanović, M., Milojković, J., Petrović, M., & Petrović, J. (2014). Optimization of process parameters to obtain NH₄-clinoptilolite as a supplement to ecological fertilizer. *Clay Minerals*, 49(5), 735–745.
- Moisés, M. P., Da Silva, C. T. P., Meneguim, J. G., Giroto, E. M., & Radovanovic, E. (2013). Synthesis of zeolite NaA from sugarcane bagasse ash. *Materials Letters*, 108, 243–246.
- Mohamed, E. A., Selim, A. Q., Seliem, M. K., & Abukhadra, M. R. (2015). Modeling and optimizations of phosphate removal from aqueous solutions using synthetic zeolite NaA. *Journal of Materials Science and Chemical Engineering*, 3, 15-29.
- Muraza, O. (2015). Maximizing diesel production through oligomerization: A landmark opportunity for zeolite research. *Industrial and Engineering Chemistry Research*, 54(3), 781–789.

- Musyoka, N. M., Petrik, L. F., & Hums, E. (2011). Ultrasonic assisted synthesis of zeolite A from coal fly ash using mine waters (acid mine drainage and circumneutral mine water) as a substitute for ultra-pure water. *Imwa*, 423–428.
- Musyoka, N. M., Petrik, L. F., Balfour, G., Ndungu, P., Gitari, W. M., & Hums, E. (2012). Synthesis of zeolites from coal fly ash: Application of a statistical experimental design. *Research on Chemical Intermediates*, 38(2), 471–486.
- Musyoka, N. M., Petrik, L. F., Hums, E., Baser, H., & Schwieger, W. (2014). In situ ultrasonic diagnostic of zeolite X crystallization with novel (hierarchical) morphology from coal fly ash. *Ultrasonics*, 54(2), 537–543.
- Musyoka, N. M., Petrik, L., & Hums, E. (2014b). Ultrasonic synthesis of zeolites from fly ash. EP2741999 A1.
- Na, J., Liu, G., Zhou, T., Ding, G., Hu, S., & Wang, L. (2013). Synthesis and catalytic performance of ZSM-5/MCM-41 zeolites with varying mesopore size by surfactant-directed recrystallization. *Catalysis Letters*, 143(3), 267–275.
- Najib, N. N., Ismail, H., & Azura, a. R. (2009). Thermoplastic elastomer composites of palm ash-filled ethylene vinyl acetate/natural rubber blends: Effects of palm ash loading and size. *Polymer-Plastics Technology and Engineering*, 48(10), 1062–1069.
- Nicholas (2010). Zeolites in industrial separation and catalysis. Kulprathipanja, S. Great Britain: Wiley-VCH Verlag GmbH & Co. KgaA
- Niwa, M., Katada, N. & Okumura, K. 2010. Characterization and design of zeolite catalysts solid acidity, shape selectivity and loading properties. Hull, R., Jagadish, C., Osgood, Jr., R.M., Parisi, J., Wang, Z. and Warlimont, H. Springer Series in Materials Science, 141. Heidelberg: Springer.
- Ogawa, A., Iyoki, K., Kamimura, Y., Palani, S., Itabashi, K., & Okubo, T. (2014). Microporous and mesoporous materials seed-directed, rapid synthesis of MAZ-type zeolites without using organic structure-directing agent. *Microporous and Mesoporous Materials*, 186, 21–28.
- Ojha, K., Pradhan, N. C., & Samanta, A. N. (2004). Zeolite from fly ash: Synthesis and characterization. *Bulletin of Materials Science*, 27(6), 555–564.
- Ooi, Z. X., Ismail, H., & Abu Bakar, A. (2015). Characterization of oil palm ash (OPA) and thermal properties of OPA-filled natural rubber compounds. *Journal of Elastomers and Plastics*, 47(1), 13–27.
- Pal, P., Das, J. K., Das, N., & Bandyopadhyay, S. (2013). Synthesis of NaP zeolite at room temperature and short crystallization time by sonochemical method. *Ultrasonics Sonochemistry*, 20(1), 314–321.
- Panwar, V., Prasad, B., & Wasewar, K. L. (2011). Biomass residue briquetting and characterization. *Journal of Energy Engineering*, 137(2), 108–114.

- Park, J., Kim, B. C., Park, S. S., & Park, H. C. (2001). Conventional versus ultrasonic synthesis of zeolite 4A from kaolin. *Journal of Materials Science Letters*, 20(6), 531–533.
- Querol, X., Moreno, N., Umaa, J. C., Alastuey, a., Hernández, E., López-Soler, a., & Plana, F. (2002). Synthesis of zeolites from coal fly ash: an overview. *International Journal of Coal Geology*, 50(1–4), 413–423.
- Querol, X., Alastuey, A., López-Soler, A., Plana, F., Andrés, J. M., Juan, R., & Ruiz, C. R. (1997). A fast method for recycling fly ash: Microwave-assisted zeolite synthesis. *Environmental Science and Technology*, 31(9), 2527–2533.
- Ranjbar, N., Mehrali, M., Alengaram, U. J., Metselaar, H. S. C., & Jumaat, M. Z. (2014). Compressive strength and microstructural analysis of fly ash/palm oil fuel ash based geopolymer mortar under elevated temperatures. *Construction and Building Materials*, 65, 114–121.
- Rasch,D.,Pilz, J.,Verdooren, R. & Gebhardt, A. (2011). *Optimal experimental design with R*. USA: Chapman and Hall.GmbH & Co. KgaA.
- Rayalu, S. S., Bansiwai, A. K., Meshram, S. U., Labhsetwar, N., & Devotta, S. (2006). Fly ash based zeolite analogues: Versatile materials for energy and environment conservation. *Catalysis Surveys from Asia*, 10(2), 74–88.
- Ryan, T. P. (2007). *Modern experimental design*. New Jersey: Wiley.
- Safiuddin, M., Abdus Salam, M., & Jumaat, M. Z. (2011). Utilization of palm oil fuel ash in concrete: A review. *Journal of Civil Engineering and Management*, 17(2), 234–247.
- Saikia, B. J., & Parthasarathy, G. (2010). Fourier transform infrared spectroscopic characterization of kaolinite from Assam and Meghalaya, northeastern India. *Journal of Modern Physics*, 1(4), 206–210.
- Salih, M. A., Farzadnia, N., Ali, A. A. A., & Demirboga, R. (2015). Effect of different curing temperatures on alkali activated palm oil fuel ash paste. *Construction and Building Materials*, 94, 116–125.
- Salih, M. A., Abang Ali, A. A., & Farzadnia, N. (2014). Characterization of mechanical and microstructural properties of palm oil fuel ash geopolymer cement paste. *Construction and Building Materials*, 65, 592–603.
- Sallam, M. (2006). *Zeolite synthesis from municipal solid waste ash using fusion and hydrothermal treatment*. Ph.D thesis. University of South Florida, USA.
- Santasnachok, C., Kurniawan, W., & Hinode, H. (2015). The use of synthesized zeolites from power plant rice husk ash obtained from Thailand as adsorbent for cadmium contamination removal from zinc mining. *Journal of Environmental Chemical Engineering*, 3(3), 2115–2126.

- Sapawe, N., Jalil, A. A., Triwahyono, S., Shah, M. I. A., Jusoh, R., Salleh, N. F. M., & Karim, A. H. (2013). Cost-effective microwave rapid synthesis of zeolite NaA for removal of methylene blue. *Chemical Engineering Journal*, 229, 388–398.
- Sata, V., Jaturapitakkul, C., & Rattanashotinunt, C. (2010). Compressive strength and heat evolution of concretes containing palm oil fuel ash. *Journal of Materials in Civil Engineering*, 22(10), 1033–1038.
- Sata, V., Jaturapitakkul, C., & Kiattikomol, K. (2004). Utilization of Palm Oil Fuel Ash in High-Strength Concrete. *Journal of Materials in Civil Engineering*, 16(6), 623–628.
- Science Direct. (2017)(Online). Retrieved from www.sciencedirect.com on 24th April 2017.
- Shams, K., & Ahi, H. (2013). Synthesis of 5A zeolite nanocrystals using kaolin via nanoemulsion- ultrasonic technique and study of its sorption using a known kerosene cut. *Microporous and Mesoporous Materials*, 180, 61–71.
- Shoumkova, A., & Stoyanova, V. (2013). Zeolites formation by hydrothermal alkali activation of coal fly ash from thermal power station “maritsa 3”, Bulgaria. *Fuel*, 103, 533–541.
- Simsek, E. B., Özdemir, E., & Beker, U. (2013). Process optimization for arsenic adsorption onto natural zeolite incorporating metal oxides by response surface methodology. *Water, Air, and Soil Pollution*, 224(7), 1–14.
- Siriwardane, R. V., Shen, M. S., Fisher, E. P., & Losch, J. (2005). Adsorption of CO₂ on zeolites at moderate temperatures. *Energy and Fuels*, 19(3), 1153–1159.
- Tangchirapat, W., Saeting, T., Jaturapitakkul, C., Kiattikomol, K., & Siripanichgorn, A. (2007). Use of waste ash from palm oil industry in concrete. *Waste Management*, 27(1), 81–88.
- Tay, B. J. (1990). Ash from oil - palm waste as concrete material, *Journal of Materials in Civil Engineering*, 2(2), 94–105.
- Vaičiukynienė, D., Kantautas, A., Vaitkevičius, V., Jakevičius, L., Rudžionis, Ž., & Paškevičius, M. (2015). Effects of ultrasonic treatment on zeolite NaA synthesized from by-product silica. *Ultrasonics Sonochemistry*, 27, 515–21.
- Volli, V., & Purkait, M. K. (2015). Selective preparation of zeolite X and A from flyash and its use as catalyst for biodiesel production. *Journal of Hazardous Materials*, 297, 101–111.
- Wang, B., Wu, J., Yuan, Z. Y., Li, N., & Xiang, S. (2008). Synthesis of MCM-22 zeolite by an ultrasonic-assisted aging procedure. *Ultrasonics Sonochemistry*, 15(4), 334–338.
- Wang, S., & Zhu, Z. H. (2005). Sonochemical treatment of fly ash for dye removal from wastewater. *Journal of Hazardous Materials*, 126(1–3), 91–95.

- Wu, C., Wu, J., Luo, H., Wang, S., & Chen, T. (2016). Ultrasonic radiation to enable improvement of direct methanol fuel cell. *Ultrasonics Sonochemistry*, 29, 363–370.
- Wu, J., Wang, B., Li, N., & Xiang, S. (2006). Effect of aging with ultrasound on the synthesis of MCM-49 zeolite. *Chinese Journal of Catalysis*, 27(5), 375–377.
- Yoshizaki, T., Shirai, Y., Hassan, M. A., Baharuddin, A. S., Abdullah, N. M. R., Sulaiman, A., & Busu, Z. (2012). Economic analysis of biogas and compost projects in a palm oil mill with clean development mechanism in Malaysia. *Environment, Development and Sustainability*, 14(6), 1065–1079.
- Youssef, H., Ibrahim, D., & Komarneni, S. (2008). Microwave-assisted versus conventional synthesis of zeolite A from metakaolinite. *Microporous and Mesoporous Materials*, 115(3), 527–534.
- Yuhazri, M. Y., Sihombing, H., Yahaya, S. H., Said, M. R., Nirmal, U., Lau, S., & Tom, P. P. (2012). Solid Fuel from Empty Fruit Bunch Fiber and Waste Papers Part 3 : Ash Content from Combustion Test. *Global Engineers and Technologists Review*, 20–24.
- Yunus, S. N. M. S. M., Ismail, K. N., Hamid, K. H. K., Alias, R., Musa, M., Ramley, M. H., & Aziz, D. Z. A. (2012). Preparation and characterization of multichannel catalyst monolith using ZSM-5 zeolite. *CHUSER 2012 - 2012 IEEE Colloquium on Humanities, Science and Engineering Research*, 652–656.
- Zainudin, N. F., Lee, K. T., Kamaruddin, A. H., Bhatia, S., & Mohamed, A. R. (2005). Study of adsorbent prepared from oil palm ash (OPA) for flue gas desulfurization," *Separation and Purification Technology*, 45(1), 50-60.
- Zhang, D., Wang, R., & Yang, X. (2009). Application of fractional factorial design to ZSM-5 synthesis using ethanol as template. *Microporous and Mesoporous Materials*, 126(1–2), 8–13.
- Zhu, B., Hong, Z., Milne, N., Doherty, C. M., Zou, L., Lin, Y. S., & Duke, M. (2014). Desalination of seawater ion complexes by MFI-type zeolite membranes: Temperature and long term stability. *Journal of Membrane Science*, 453, 126–135.
- Zunbul, B. (2005). AAS , XRPD , SEM / EDS , and FTIR studies of the effect of calcite and magensite on the uptake of Pb^{2+} and Zn^{2+} ions by natural kaolinite and clinoptilolite. Master Thesis. Izmir Institute of Technology,